EPA's Environmental Technology Verification Program

ETV Program Goal

- To verify the environmental performance characteristics of commercial-ready technologies through the evaluation of objective and quality assured data, so that potential purchasers and permitters are provided with an independent and credible assessment of what they are buying and permitting.

Important Principles

- A voluntary program for commercial-ready private sector technologies
- High-quality data and information; not an “approval” or “certification” process
- Public-private partnerships to efficiently execute testing
- A “market-based” program through ongoing stakeholder participation
- Web-based publication of all products for speed and universal access

ETV Program Critical Elements

- Fairness
  - 1. Testing available to all vendors of commercial-ready technologies within defined categories
- Credibility
  - 2. Objective third-party testing
  - 3. Technically sound protocols/test plans, publicly available and capable of reproduction
- Transparent
  - 4. Public availability of methods and test results
- Quality
  - 5. Quality management and data acquisition

Six ETV Technology Centers

- ETV Advanced Monitoring Technology Center
- ETV Air Pollution Control Technology Center
- ETV Greenhouse Gas Technology Center
- ETV Drinking Water Systems Center
- ETV Water Protection Technology Center
- ETV Pollution Prevention, Recycling and Waste Treatment System Center

Partners/VOs

U.S. EPA

Testing Organizations

Stakeholders

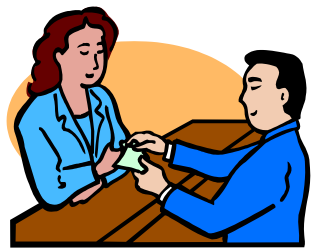
ETV Players

International Communities

Vendors

Financial Investors

States and local governments



Customers/End Users

ETV Verification Process

Form partnerships

Create stakeholder group

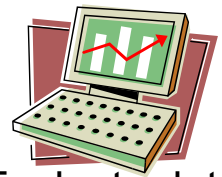
Identify technology categories

Develop generic test protocols

Identify vendors

Develop test/QA plans

Conduct technology testing



Evaluate data

Write verification report

ETV Outreach **www.epa.gov/etv**

THE ENVIRONMENTAL TECHNOLOGY VERIFICATION PROGRAM

ETV

Battelle

Battelle

EPA

U.S. Environmental Protection Agency

ETV Joint Verification Statement

TECHNOLOGY TYPE: WIDGET

APPLICATION: ADVANCED REMOTE WIDGETING

TECHNOLOGY NAME: WIDGET – 2000 – A

COMPANY: USA Widget, Inc.

ADDRESS: 1999 Main Street
Somewhere, USA 00001

PHONE: (000) 555-2000
FAX: (000) 555-2001

ITE: http:\\www.usawidget.com
widget@usawidget.com

RA) has created the Environmental Technology Verification
ative or improved environmental technologies through
. The goal of the ETV Program is to further
plance and use of improved and cost-effective
lity, peer reviewed data on technology
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Stakeholder Roles

- Priority Setting
  - Serious environmental challenges
  - Technology available for evaluation
  - Practicality
- Protocol Design
  - Verification factors
    - “Asking the right questions”
  - Test design
    - “Getting the right answers”

Verification Costs
Who Pays ?

- EPA Pays for
  - Protocol & Test Plan Development
  - Stakeholder process
  - Program outreach
- Vendor Pays for
  - Testing
  - Data analysis
  - Product outreach

Verification Costs
Who Pays?

- Shared Costs
  - Quality Assurance
  - Report Writing and Review

Ballast Water Treatment Technology Verification

- Joint Effort Between EPA & USCG
- NSF International (Verification Partner Organization)
- Battelle CREM (Contracted Technical Assistance)
- Stakeholder Advisory Group
- Technology Panel

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Definition

- Ballast water treatment technologies are defined as prefabricated, commercial-ready, treatment systems designed to either remove, kill or inactivate biological organisms that are potentially harmful to human health and the receiving ecosystem from ballast water prior to discharge

Protocol Approach

- Ballast water conditions are highly variable (i.e., physical and biological composition) causing testing complexity
- Goal - provide sufficient challenge/test conditions
- Use most challenging natural conditions at two salinity concentrations
- Develop a matrix of core challenge conditions
- Supplemental parameters dictated by technology

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Potential Challenge Conditions

- Challenge water matrix
  - Define by salinity; most challenging and moderate challenge
  - dissolved organic carbon and solid organic matter
- Known microbiological spike
  - One bacterial, one viral
  - One or two phytoplankton - easy to culture in most resistant form and representative of salinity
  - One or two zooplankton - representative of salinity

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Verification Factors

- Biological performance
- Power requirements and predictability
- Temperature and energy efficiency, CT curve
- O&M issues
- Byproducts and residuals
- Environmental impact of treated discharge

Protocol Issues

- Single or multiple protocols
- Duration of testing
- Use of surrogates in testing
- Land based, shipboard or both
  - Technology dependent considerations

Candidate Technologies

- Cyclonic separation / UV treatment
- Centrifugal separation / UV treatment / chemical biocides
- Filtration
- Ozone
- Mechanical deoxygenation

ETV Program Information

- Web sites:
  - www.epa.gov/etv
  - www.nsf.org/etv
- Contacts:
  - EPA - Ray Frederick (732) 321-6627
    - frederick.ray@epa.gov
  - NSF - Tom Stevens (734) 769-5347
    - stevenst@nsf.org